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P.S. 9/25/03

AMENDMENTS TO THE CLAIMS

Claims 1 and 2 (cancelled)

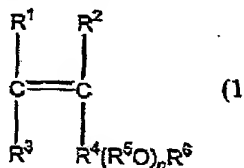
Claim 3 (previously amended)

3. A cement additive comprising:

- (a) a polycarboxylic acid copolymer and/or a salt thereof and a polyalkylene glycol compound, wherein said polycarboxylic acid copolymer contains at least one species of copolymer derived from at least an unsaturated polyalkylene glycol ether monomer (A) and an unsaturated mono- or dicarboxylic acid monomer (B) as its monomer component; or
- (b) a polycarboxylic acid copolymer and/or a salt thereof and a polyalkylene glycol compound, wherein said polycarboxylic acid copolymer contains at least one species of copolymer derived from at least an unsaturated polyalkylene glycol ether monomer (A) and an unsaturated mono- or dicarboxylic acid monomer (B) as its monomer component and said polycarboxylic acid copolymer is additionally derived from an unsaturated polyalkylene glycol ester monomer (C) and/or monomer (D), which is copolymerizable with monomers (A) and (B), or with monomers (A), (B) and (C);

wherein for (a) and (b),

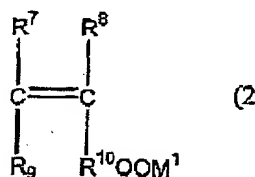
the monomer (A) is a compound according to general formula (1)



wherein R^1 , R^2 and R^3 are each independently hydrogen or methyl, provided that not all are methyl; R^4 is $-\text{CH}_2\text{O}-$, $-(\text{CH}_2)_2\text{O}-$, $-\text{C}(\text{CH}_3)_2\text{O}-$ or $-\text{O}-$; the total carbon number of R^1 , R^2 , R^3 and R^4 is 3; R^5O is one or more species of $\text{C}_2\text{-C}_4$ oxyalkylene groups, and, in the case of two or more species, is optionally block or random; R^6 is hydrogen or a $\text{C}_1\text{-C}_{22}$ alkyl, phenyl or $\text{C}_1\text{-C}_{18}$

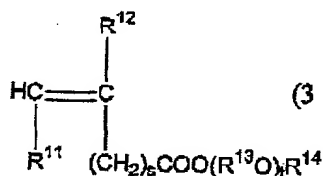
alkyl/phenyl group; p is an integer from on average 1 to 100,

the monomer (B) is a compound according to general formula (2):



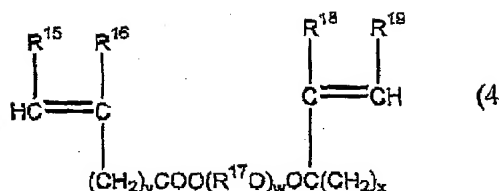
wherein R^7 and R^8 are each independently hydrogen or methyl; R^8 is hydrogen, methyl or $-(\text{CH}_2)_q\text{COOM}^2$; R^{10} is $-(\text{CH}_2)_r$; q and r are each independently an integer from 0 to 2; M^1 and M^2 are a monovalent metal, a divalent metal, ammonium or an organic amine;

the monomer (C) is a compound according to general formula (3):



wherein R^{11} and R^{12} are each independently hydrogen, methyl or $(\text{CH}_2)_u\text{COOM}^3$, u is an integer from 0 to 2, M^3 is a monovalent metal, a divalent metal, ammonium or an organic amine; R^{13}O is one or more species of $\text{C}_2\text{-C}_4$ oxyalkylene groups, and, in the case of two or more species, is optionally block or random; R^{14} is a $\text{C}_1\text{-C}_{22}$ hydrogen or an alkyl, phenyl or $\text{C}_1\text{-C}_{22}$ alkylphenyl group; s is an integer from 0 to 2; t is an integer an average from 1 to 300; and

the monomer (D) is a compound according to the following general formula (4):



wherein R^{15} , R^{16} , R^{18} and R^{19} are each independently hydrogen or methyl, provided that not all are methyl; R^{17}O is one or more species of C_2 - C_4 oxyalkylene groups, and in the case of two or more species, is optionally block or random; w is an integer an average from 1 to 300; v and x are each independently an integer from 0 to 2.

Claims 4 and 5 (cancelled)

Claim 6 (previously amended)

6. A cement additive according to claim 3, containing 100 weight parts of the polycarboxylic acid type copolymer and 10-50 weight parts of the polyalkylene glycol derivative in the mixing proportion.

Claim 7 (previously amended)

7. A cement additive according to claim 3, wherein the amount used in a cementitious composition is such that the amount of polycarboxylic acid type copolymer cement is 0.05-1.0% by weight based on the weight of cement, and the amount of the polyalkylene glycol derivative to cement is 0.005-0.5% by weight based on the weight of cement.

Claim 8 (previously amended)

8. A high strength concrete mix, comprising a cement mix and a cement additive according to claim 3.

Claim 9 (previously amended)

9. A high strength concrete mix for the production of articles by steam curing, comprising a cement mix and a cement additive according to claim 3.

Claim 10 (cancelled)

Claim 11 (previously amended)

11. A method of preparation of a high-strength concrete mix, comprising the incorporation into a concrete mix a cement additive according to claim 3.

Claim 12 (cancelled)

Claim 13 (previously amended)

13. A high strength concrete mix, comprising a cement mix and a cement additive according to claim 7.

Claim 14 (previously amended)

14. A high strength concrete mix for the production of articles by steam curing, comprising a cement mix and a cement additive according to claim 3.

Claims 15 and 16 (cancelled)

Claim 17 (previously amended)

17. A method of preparation of a high-strength concrete mix, comprising the incorporation into a concrete mix a cement additive according to claim 7.

REMARKS

Request for Entry of Amendment

Applicants respectfully request reconsideration and allowance of this application in view of the amendments above and the following comments.

At the outset, Applicants wish to address the showing required under 37 CFR § 1.116(a) regarding why the amendments above are necessary and were not presented earlier. According to MPEP 714.13 (Amendments After Final Rejection or Action, Procedure Followed - Action by Examiner), there are four grounds (cited as (A)-(D)) upon which the examiner may elect not to enter the applicants amendment. Each ground is addressed below:

(A) The claims as amended represent a narrower embodiment of the applicants originally claimed invention (applicants reserve the right to pursue broader scope of the original claims in continuing application) and as such it is believed that the amended claims are now in condition for allowance or at the very least simplifies the issues for appeal.

(B) It is believed that no new matter has been entered.

(C) The amended claims represent a narrower embodiment of the applicants invention as claimed prior to the issuance of the examiner's final rejection and as such no new issues are

raised which require further consideration or search.

(D) The amendment does not present any additional claims (claims 4, 5, 12, 15 and 16 have been cancelled).

In view of the foregoing, Applicants respectfully request that the Examiner enter and consider the amendments above.

Claims 3, 6-9, 11, 13 and 14 would be pending and it is believed that no new matter will have been added.

Objection to the Specification

At the end of the objection, the examiner posed the question "Can one of ordinary skill in the art make an acid containing copolymer out of the monomers described, which do not contain a -COOH group?"

The answer is yes as the functional portion of the moiety necessary to make the claimed copolymer is the -COO portion of the moiety. Conversion of an acid salt into the free acid (and vice-versa) is well known and accepted in the art (see e.g. claim 1, col. 23, lines 32-42 of U.S. Patent 5,925,184 cited in the examiner's prior art rejections - the term carboxylic acid is also intended to encompass salt forms thereof - see also MPEP 1701).

35 U.S.C. 112, first paragraph rejection

- (1) Claims 3-9 and 11-17 were rejected along similar lines to the objection to the specification and response give above is to be considered repeated here.
- (2) Claims 4 and 5 have been cancelled which renders the rejection moot.

35 U.S.C. 112, second paragraph rejection

Claims 6 and 7 have been amended to correct the inconsistency with claim 3.

35 U.S.C. 102(b or e)/103(a) rejection

Claims 3-9 and 11-17 were rejected as being anticipated or in the alternative as being obvious over any one of:

- | | |
|----------------------|---|
| (1) Yamashita et al. | U.S. Patent 6,294,015* |
| (2) Yamato et al. | U.S. Patent 6,239,241 |
| (3) Tanaka et al. | U.S. Patent 6,187,841 |
| (4) Hirata et al. | U.S. Patent 6,147,980* |
| (5) Hirata et al. | U.S. Patent 6,166,112* |
| (6) Kono et al. | U.S. Patent 6,185,262* |
| (7) Yamashita et al. | U.S. Patent 6,087,418* |
| (8) Hirata et al. | U.S. Patent 5,925,184* |
| (9) Yamato et al. | U.S. Patent 5,707,445 |
| (10) Nippon Shokubai | EP 0 792 850 (U.S. 5,925,184 is English language equivalent)* |
| (11) Denki Kagaku | JP 10-167790 (publication number) JP 0336720 (application number) |

* - Indicates that assignee is Nippon Shokubai Co., Ltd.

A. Response to Anticipation rejection

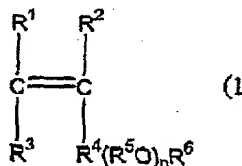
Background

MPEP 2131 states that to anticipate a claim, the reference must teach every element of the claim and quotes from *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d, 1913, 1920 (Fed. Cir. 1989) which states "The identical invention must be shown in as complete detail as is contained in the...claim."

In addition, the examiner cited *In re Arkley* in the previous office action. This decision also teaches that for a proper anticipation rejection, the reference "must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." see *In re Arkley*, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972).

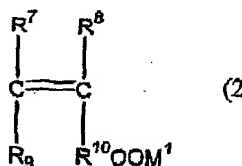
For simplicity's sake, the basic elements of the cement additive of applicants' claim 3, which attention appears to have been primarily directed, are:

- (a) a polycarboxylic acid copolymer which contains at least one species of copolymer derived from at least an unsaturated polyalkylene glycol ether monomer (A):



(none of the variables for (1) include a carboxyl moiety)

and an unsaturated mono- or dicarboxylic acid monomer (B):



and

- (b) a polyalkylene glycol compound

(1) *Nippon Shokubai Co., Ltd. references*

(a) Yamashita et al. U.S. Patent 6,294,015

Yamashita et al.'s polycarboxylic acid copolymer portion of the composition does not include the monomer (A) as described in the applicants' claims. Both references also lacks a teaching for the presence of the polyalkylene glycol compound component of the applicants' claim.

(b) Hirata et al. U.S. Patent 6,174,980

Hirata et al. lacks a teaching for the presence of the polyalkylene glycol compound component of the applicants' claim.

(c) Hirata et al. U.S. Patent 6,166,112

Hirata et al. differs from the applicants' invention in that Hirata et al.'s "monomer (A)" is an alkyl-type glycol not an alkene-type glycol (compare formula (1) from col. 1, line 55-60 of Hirata et al. v. applicants' monomer (A)). Hirata et al. also differs from the applicants' invention in that a separate polyalkylene glycol compound is not described.

(d) Kono et al. U.S. Patent 6,165,262

Kono et al. lacks a specific teaching for monomer (A) and also the presence of a polyalkylene glycol compound. The broadness of the Kono et al. reference appears to fail the "identical invention in as complete a detail" test.

(e) Yamashita et al. U.S. Patent 6,087,418

It is presumed that the teaching of the specification is being relied upon (i.e. col. 3, line 45 thru col. 4, line 15) as the claims do not read upon the applicants invention.

However, Yamashita et al.'s polycarboxylic acid copolymer lacks either of monomer (A) or (B) as described by the applicants and does not teach the addition of the polyalkylene glycol compound component of the applicants' claim.

(f) Hirata et al. U.S. Patent 5,925,184 (also EP 0 792 850)

Hirata et al. differs from the applicants' invention in at least a couple of regards:

(i) No teaching for polycarboxylic acid copolymer as defined by the applicants, i.e. all of the monomers contain at least one carboxy moiety; applicants copolymer must include monomer (A) which *does not include* a carboxy moiety.

(ii) No teaching for the separate polyalkylene glycol compound

(2) Yamato et al. (U.S. Patents 6,239,241 and 5,707,445)

Both Yamato et al. references differ from the applicants' invention in at least a couple of regards:

(i) No teaching for polycarboxylic acid copolymer as defined by the applicants, i.e. all of the monomers contain at least one carboxy moiety; applicants copolymer must include monomer (A) which **does not include** a carboxy moiety.

(ii) No teaching for the separate polyalkylene glycol compound

(3) Tanaka et al. (U.S. Patent 6,187,841)

Tanaka et al.'s polycarboxylic acid copolymer portion of the composition does not include the monomer (A) as described in the applicants' claims. Both references also lacks a teaching for the presence of the polyalkylene glycol compound component of the applicants' claim.

(4) Denki Kagaku (JP 10-167790 - referred to as "Denki" below)

Denki lacks a teaching for the presence of the polyalkylene glycol compound component of the applicants' claim.

B. Response to Obviousness rejection

In the examiner's first office action, the concluding statement in support of the obviousness portion of the rejection stated that "Since the cited references exhibit all concentrations of monomers, monomer ratios, molecular weights and polymer concentrations, any combination of the above variables would have been obvious to one having ordinary skill in the art, at the time the invention was made."

The examiner cited *In re Arkley* to support the position that it is proper to "pick and choose" to establish an obviousness rejection. However, this position still does not obviate the examiner's burden to establish that the prior art taught and suggested such picking and choosing and that there was sufficient motivation to make the appropriate selections.

1. Obvious to try rationale

Although not specifically stated by the examiner, the obviousness rejection appeared to be an "obvious to try" rationale for modifying the reference(s) which is an improper standard for obviousness, see MPEP 2144.05 X, which states:

"The admonition that 'obvious to try' is not the standard under § 103 has been directed mainly at two kinds of error. In some cases, what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful.... In others, what was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (citations omitted) (The court held the claimed method would have been obvious over the prior art relied upon because one reference contained a detailed, enabling methodology, a suggestion to modify the prior art to produce the claimed invention, and evidence suggesting the modification would be successful.).

However, as cited in the response to the anticipation rejection, there are differences between the prior art and the applicants' claimed invention which have not been accounted for nor has proper teaching or direction been cited for the motivation to modify the reference(s) to arrive at the applicants' claimed invention.

2. Optimization of parameters rationale

If the basis for the rejection was the "optimize parameters" rationale as outlined in MPEP 2144.05, section I, consideration must also be given to MPEP 2144.05, section II, which states that "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonio*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)."

3. Could have been modified rationale

If the basis for the rejection was that one of ordinary skill in the art could have modified the references, MPEP 2143.01 states that "A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (BPAI 1993)."

4. Evidence of secondary considerations

Tables 1-4 (pages 10-12 of the specification) disclose evidence of unexpected results with regard to concrete strength for various embodiments of the applicants' invention. These results show that the nature of the polycarboxylic acid copolymer and/or the presence of a polyalkylene glycol compound materially effect concrete strength; a feature which was not recognized by the prior art.

5. History of prior art

Lastly, the lineage of the Nippon Shokubai patents shown by the examiner appears to establish that bar for what constitutes obviousness is very high for this particular art as even incremental changes in the prior art were deemed to be patentably distinct inventions. To reject the applicants' present claims over the prior art would appear to cast aspersions on the Nippon Shokubai family of patents (see MPEP 1701).

6. Conclusion

For any of the reasons cited above, it is believed that it would be appropriate for the examiner to withdraw the rejections based on obviousness.

Closing

Applicants believe that the foregoing constitutes a bona fide response to all outstanding objections and rejections.

Applicants also believe that this application is in condition for immediate allowance. However, should any issue(s) of a minor nature remain, the Examiner is respectfully requested to telephone the undersigned at telephone number (212) 808-0700 so that the issue(s) might be promptly resolved.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing Amendment under 37 CFR § 1.116 (11 pages total) is being facsimile transmitted to the United States Patent and Trademark Office on the date indicated below:

Date: 25 August 2003

By: Agata Gliniska

Agata Gliniska

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